Pataha Creek Model Watershed

Habitat Conservation Projects

Annual Report
2003

DOE/BP-00004289-1

April 2004

This Document should be cited as follows:

Bartels, Duane, "Pataha Creek Model Watershed; Habitat Conservation Projects", 2003 Annual Report, Project No. 199401807, 14 electronic pages, (BPA Report DOE/BP-00004289-1)

Bonneville Power Administration
P.O. Box 3621
Portland, OR 97208

This report was funded by the Bonneville Power Administration (BPA), U.S. Department of Energy, as part of BPA's program to protect, mitigate, and enhance fish and wildlife affected by the development and operation of hydroelectric facilities on the Columbia River and its tributaries. The views in this report are the author's and do not necessarily represent the views of BPA.

PATAHA CREEK MODEL WATERSHED

January 2003 – December 2003 Habitat Conservation Projects

Cooperators:
Bonneville Power Administration
Washington State Conservation Commission
Washington State Department of Fish and Wildlife
Natural Resources Conservation Service
Umatilla National Forest, Pomeroy Ranger District
Farmers and Ranchers of the Pataha Watershed

Annual Report for Parent Project 1994-018-07
BPA Contract 00004289
BPA Contract 00006874

April 2004

Jan 2003 thru Dec 2003 Habitat Projects Completed

Prepared for:

U.S. Department of Energy
Bonneville Power Administration
Environment, Fish and Wildlife Division

Washington State Conservation Commission

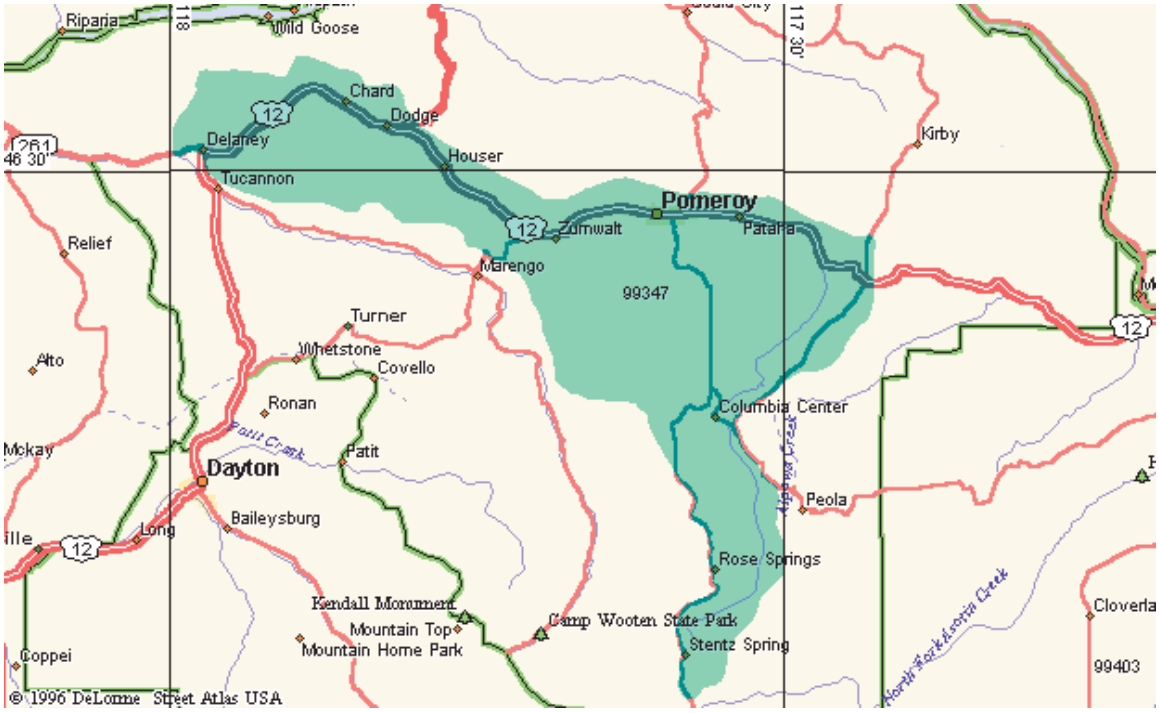
Washington Department of Fish and Wildlife

Umatilla National Forest, Pomeroy Ranger District

Natural Resources Conservation Service

By:

Duane G. Bartels
District Manager
Pomeroy Conservation District
804 Main P.O. Box 468
Pomeroy, WA 99347
duanebar@pomeroy-wa.com



Pataha Creek Watershed

Located in Garfield County in SE Washington

Table of Contents

Abstract

The objectives and tasks outlined in detail in this project report were implemented during calendar year 2003 in the Pataha Creek Watershed. The Pataha Creek Watershed was selected in 1993, along with the Tucannon and Asotin Creeks, as model watersheds by the Northwest Power and Conservation Council (NPCC). In the years since 1993 until now, numerous practices have been implemented in the Pataha Creek Watershed. The following sections show the individual practices, quantity of practices implemented, total costs, BPA costs and tons of soil saved for all the BPA funds used to protect and enhance the natural resources in the Pataha Creek Watershed.

In 2003, only a small amount of cost share practices were implemented. This is largely due to other funding programs becoming available, producers reaching practice limitations set by the District Board, and less money being available to the Pomeroy CD from BPA until the Sub-basin plans are completed and accepted by the NPCC.

The last 10 years have shown that new practices can be introduced to producers under a cost share program and accepted and used without additional funding.

Over 95% of the sediment entering the stream can be tied directly to the upland and riparian areas of the watershed.

The Pataha Creek has steelhead in the upper reaches and native and planted rainbow trout in the mid to upper portion. Suckers, pikeminow, and shiners inhabit the lower portion because of the higher water temperatures and lack of vegetation. The improvement of riparian habitat has improved habitat for all the fish species. The lower portion of the Pataha Creek could eventually develop into spawning and rearing habitat for chinook salmon if some migration barriers are removed and habitat is restored.

The upland projects completed during 2003 were practices that reduce erosion from croplands. Three-year continuous no-till projects were finishing up and the monitoring of this particular practice is ongoing. Its direct impact on soil erosion and the economic aspects are being studied.

2003 showed less project implementation than previous years due to the fact that most of the cooperators in the watershed have reached their limitation of 3 years for each practice allowed for no-till and direct seed/ two pass. All the upland practices that were implemented have helped to further reduce erosion from the cropland. This has resulted in a reduction of sedimentation into the spawning and rearing area of the fall chinook salmon located in the lower portion of the Tucannon River. The tree planting projects have helped reduce sedimentation and have also improved the riparian zone in desired locations inside the Pataha Creek Watershed. The CREP (Conservation Reserve Enhancement Program) and the CCRP (Continuous Conservation Reserve Program) are becoming more prevalent in the watershed and are protecting the riparian areas along the Pataha Creek at an increasing level every year. Currently, roughly 197 acres of riparian habitat have been enrolled along the Pataha Creek in the CREP program.

Introduction

Due to the high value of the fish resource in the Tucannon River, there have been many studies and planning efforts directed at restoring resource conditions in this watershed. Pataha Creek, as the largest sub-watershed in the Tucannon watershed has been identified as one of the primary contributors of sediment to the Tucannon River.

Frank Reckendorf and Mike VanLiew conducted one of these studies. Their work from September 1985 to April 1986 helped determine sediment intrusion into artificial redds in the Tucannon Watershed. Under this study, the textural composition of artificial redds was monitored over a 6-month period to determine sediment intrusion into salmonid spawning beds. The artificial redds were constructed in September 1985, at four sites on the Tucannon River in Southeast Washington. Freeze-core samples were then collected 4 times, from October 1985 to April 1986. The data indicated a marked increase in the percentage of fines and sand sized material present in the redds due to sediment intrusion from winter runoff on the Tucannon River. The apparent decrease in both pore size and relative permeability of the artificial redds due to sediment intrusion reflects a potential decrease in the survival-to-emergence of salmonid.

The effects of fine sediment and organic matter on salmonid reproduction have been studied intensively for more than three decades, both in site and in the laboratory. General information from these studies have shown that sands, silts, clays and organic matter that are deposited in gravel spawning beds – referred to as redds – adversely affect the survival to emergence of salmonid populations. Clogging of gravel beds by fine sediments and organic matter reduce the availability of dissolved oxygen needed by salmonid embryos and fry. Fine sediments that are deposited in gravel beds also restrict metabolic wastes produced by incubating salmonid eggs. Moreover, fine sediments that clog the interstices of gravel spawning beds entrap the fry within the gravel as they try to emerge.

This project was proposed to the Northwest Power and Conservation Council in 1993 to help address some of these problems through the model watershed process. To date, we estimate over 200,000 tons, or 400 million pounds of sedimentation, have been avoided in the Pataha Creek Watershed. This amounts to covering a football field 116 feet deep with rich organic top soil. Eleven miles of riparian fencing have been installed through BPA, and over 40 farmers have tested direct or no-till seeding with over half of them adopting the practices as a part of there seeding operations.

Budget Summary

BPA Contract	Project Name	Total Cost	BPA Cost	Cost Share
4289	Administration	$33,710	$33,710	$0
6874	No-till seeding	$6,042	$3,021	$3,021
6874	Direct seeding	$8,954	$4,477	$4,477
6874	Riparian fencing	$2,810	$1,107	$703
	Totals	**$51,516**	**$42,315**	**$8,201**
	Percentages	100%	84%	16%

Project Summaries

Watershed Project Coordination and Administration for 2003; Contract #4289

The Pomeroy Conservation District was provided funding from the BPA to continue the administration and implementation of the Pataha Creek Model Watershed Plan. This plan is a pilot effort to encourage private landowners to join government agencies in finding solutions to loss of salmon habitat and critical riparian areas. The goal of the plan is to set into motion efforts to return the upper Pataha Creek Watershed and lower Tucannon River to productive capacity for salmon spawning and rearing.

The Pataha's past high delivery of sediment and high water temperatures into the spawning and rearing area of the lower Tucannon River was determined to be the main problem in the Pataha Creek Watershed.

The conservation district hired a watershed coordinator to bring together the technical experts of state and federal agencies with private landowners to jointly find solutions to habitat problems within the watershed. The technical representatives provide the scientific background and information on critical needs of the fish while the landowners provide the common sense backstop to ensure that the action items suggested by the agencies are attainable, physically and financially within the watershed.

The Pomeroy Conservation District has worked with the Washington State Conservation Commission, Bonneville Power Administration, and the Natural Resources Conservation Service since the beginning of this pilot program. We have jointly implemented conservation practices to help reduce the erosion and resulting sedimentation moving from our uplands into the Tucannon River. We have also installed practices within the riparian area to improve bank stability, riparian vegetation and in-stream fish habitat.

The Pomeroy Conservation District has been involved in the subbasin planning process for the Tucannon Subbasin and was the lead for the Lower Snake Subbasin. This process has taken over a year with funding provided by the NWPCC and consisted of many meetings of both technical and citizen representatives, WDFW data collection, and the writing of the plan by consulting firms. With limited staffing in the district, the district manager has spent the majority of his time coordinating this planning process. These two plans will be delivered to the NWPCC on May 28, 04.

BPA funding under contract 4289 was used for salaries and benefits for the coordinator and administrative assistant, travel expenses, and goods and services needed for the administration of the cost-sharing program for the calendar year 2003.

The following summary reflects those expenses:

Salaries & Benefits		
Coordinator	$ 8,808	
Clerical	$17,706	
Total		$26,514
Goods and Services		
Cellphone	$ 133	
Communications	$ 324	
GIS	$ 551	

Information Edu.	$ 216	
Internet Service	$ 158	
Office Supplies	$ 3,095	
Postage	$ 617	
Storage	$ 660	
Project support	$ 4	
Supplies	$ 16	
Support of existing Proj.	$ 187	
Water testing	$ 585	
Weather Stations	$ 650	
Total		$ 7,196
Total Admin.		$33,710

The following sections illustrate the projects implemented under contract 6874 and a separate Washington Department of Ecology grant. Tons of soil saved are calculated using the RUSLE (Revised Universal Soil Loss Equation) and is the amount of soil saved using the practice compared to a conventional method of seed production using cultivation with no conservation practices involved in the crop production program.

No-till seeding; Contract #6874

Table 1

CS #	Operator	BPA CS	Operator CS	Acres	Tons soil saved
8252	Gilbert Farms Partnership	$3,021	$3,021	201	1,407
	Totals	$3,021	$3,021	201	1,407

Farmers who elected no-till seeding were eligible for cost-sharing at $15 per acre. The reason for only one signup under this no-till practice is because the majority of the farmers located in the Pataha Creek Watershed have used their limit on the number of no-till seeding projects that can be cost shared. Three years ago, the board of supervisors implemented a policy that if a producer receives 3 payments ($5,000 limit per payment), that they could no longer receive cost share for no-till. The board felt that the funding should be used to introduce the producers to the practice and that three years would be long enough for the producer to decide if he wanted to use the no-till practice in his farming operation. This policy spread the limited funding under this contract among more farmers and reduced the amount that one operator could continue to receive.

Figure 1. John Deere 750 No-till Drill

This drill (Figure 1) and others similar to this are used to no-till grain crops into soil that has remained undisturbed since the last crop. The drills are capable of preparing a seed bed, placing fertilizer, and seeding in one operation. The advantage of this seeding system is the overall reduction in soil erosion and the improvement of soil health. When soil is not cultivated as it has been in the past, a much lower amount of carbon dioxide is released into the atmosphere. The soil is not left exposed to the elements and will not erode from the crop fields into nearby streams. No-till or direct seeding in conjunction with annual cropping and crop rotations is one of the very best ways to reduce upland erosion and the resulting sedimentation into our fish bearing streams.

Direct Seeding; Contract #6874

Table 2

CS #	Operator	BPA CS	Operator CS	Acres	Tons soil saved
8253	Regie Waldher	$1,702	$1,702	170.2	681
8251	Baker Shelton	$2,775	$2,775	277.5	555
	Total	$4,477	$4,477	447.7	1,236

Figure 2. McGregor Highlander fertilizer applicator

Farmers electing direct seeding can receive $10 per acre in cost share from this program. The direct seeding system is very similar to no-till seeding. The difference is that under a direct seed system, the fertilizer is applied in a separate operation from the seeding of the crop.

Direct seeding is as good as no-till in reducing soil erosion. It leaves large amounts of residue on the soil surface for protection against wind and water erosion. It opens up the ground so moisture may enter more readily. However, unlike no-till seeding, most direct seed systems disturb the soil in such a manner that the overall soil health shows less improvement with a larger amount of carbon dioxide escaping into the atmosphere.

The equipment necessary to do this conservation practice is much more available than for a no-till operation. Most of the chemical and fertilizer dealers have the fertilizer equipment available and many have purchased drills capable of seeding into the high residue.

This practice is the next best thing to no-till and has brought many cooperators into the area of minimum tillage, annual cropping, and crop rotations.

Riparian and Upland Fencing; Contract #6874

Table 3

CS #	Operator	BPA CS	Operator CS	Feet	Tons soil saved
8250	Buddy Boyd	$1,583	$528	9,000	
8249	Ron Kessler	$524	$175	1,500	
	Total	$2,107	$703	10,500	

Figure 3. Upland and Riparian Fencing in Pataha Creek WS 2003

In the Pataha Creek Watershed, riparian fencing (Figure 4) is being accomplished through BPA Cost Share programs. As the picture below shows, the riparian area along much of the Pataha Creek lacks protection to help stabilize the high stream banks. Riparian fencing allows the landowner to remove livestock from the areas of these high banks. This then allows them to establish trees and grasses on and along these banks to protect them from collapsing into the stream. Programs such as the CREP program and a WDOE grant that was received will allow more farmers access to funding in the county to implement this particular practice.

Figure 4. Riparian fencing

Only one grassed waterway to reduce gully erosion was constructed in the watershed during 2003. Cost share was only $33.71 and was completed by L&M Ranch. Waterways, like terraces and sediment basins, are giving way to newer practices that eliminate or reduce runoff before it starts, such as no-till and direct seeding. Those waterways that are already established are being maintained at the producers' own expense.

Water Quality Monitoring in Pataha Creek Watershed; Contract 4289 supporting a WDOE grant

WSU is conducting the water quality-monitoring program in the Pataha Creek Watershed, Deadman Creek Watershed, and Alpowa Creek Watershed and is again funded under a current Washington Department of Ecology grant received by the district in 2002. Quarterly reports are available from February thru October 2003 and can be obtained at the district office in Pomeroy. A Watershed Scale Study on no-till farming systems for reducing sediment delivery conducted by WSU is also available at the district. A detailed explanation was given in last year's report covering all data collected, protocols, and procedures.

Figure 5. Water quality monitoring station P-4

Report Conclusion

This report describes the activities and associated costs within the Pataha Creek Watershed from January 2003 through December of 2003.

This report is much shorter than previous years' reports. There are several reasons why the implementation of projects in the Pataha Creek Watershed was reduced in 2003. Due to the writing of two sub-basin summaries and sub-basin plans for Garfield County, the funding of projects under any new contracts ended in 2001. The remaining funding available under contract 6874 was stretched out over the next two years to keep the program functioning. It is hoped that when sub-basin planning is completed for the Lower Snake and Tucannon sub-basins, that new

activities will bring the program back to par and we will be able to continue with the implementation of habitat restoration and sediment reduction practices.

The Pomeroy Conservation District would like to thank the Bonneville Power Administration for the funding they provided. The habitat in the Pataha Watershed is being improved and the Pomeroy CD will continue its efforts to enhance and restore habitat for the fish and wildlife within the watershed's boundaries.

References

The following lists the publications used in the preparation of the Pataha Creek Model Watershed Plan and also parts of this report.

Sampling of Sediment Intrusion into Artificial Redds in the Tucannon Watershed (Reckendorf & VanLiew, 1989): This was a study completed under the authority of the Soil Conservation Service to determine the affect of sedimentation on artificial redds at four sites in the Tucannon Watershed.

Tucannon River Watershed Plan (USDA 1991): This plan was prepared under authority of PL-566 and recommends certain conservation practices that would lower water temperature and reduce the amount of sediment delivered to the stream. This plan provides federal cost-share funds to private landowners to help establish the recommended practices. In stream habitat improvement, however, was not included as part of the planning or funding of this project.

Sediment Transport, Water Quality and Changing Bed Conditions, Tucannon River, Washington (Hecht et al. 1982): This plan identified and discussed the effects of land use and other watershed influences on the water quality and fish habitat of the river. It also discussed the effects of reduced water quality on the aquatic populations within the stream.

Ecological Investigations on the Tucannon River, Washington (Kelley and Associates 1982): This study is the second part of the 1981 USDA report listed above, and includes the related biological investigations for the report.

Southeast Washington Cooperative River Basin Study (USDA 1984): The objective of this study was to provide a basin-wide evaluation of existing land management and stream habitat conditions related to erosion and sediment problems.

Tucannon Basin Final Report - Assessment of Ongoing Management Activities (USDA Forest Service 1993): This report analyzes the potential impacts of forest activities, within the Umatilla National Forest, on Chinook salmon in the Tucannon River.

Pataha Creek Water Quality Report 1998-2001: The objective of this study is to evaluate the water quality in the Pataha Creek watershed in an effort to determine the effectiveness of agricultural conservation practices in southeast Washington's Pomeroy Conservation district. Data presented were collected between March 1999 and July 2001, and then analyzed by Washington State University's Department of Biological Systems and by the Center for Environmental Education.